14. (New) A processing method according to claim 8, wherein the heater is actuated after finishing the step of forming the product.

REMARKS

In the Office Action the Examiner required restriction under 35 U.S.C. § 121 between Group I, claims 1-7, drawn to a processing apparatus, and Group II, claims 8 and 9, drawn to a method of removing an oxide film. Applicants provisionally elected to prosecute Group I, claims 1-7 drawn to a processing apparatus, by telephone, and confirm that election.

Currently claims 1-14 are pending in the application. Newly added claims 10-13 are drawn to the elected Group I and newly added claim 14 is drawn to the non-elected Group II.

In the Office Action, claims 2 and 5 were rejected under 35 U.S.C. § 102(b) as being anticipated by US. Patent No. 5,076,205 ("Vowles et al."); claim 1 was rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,532,593 ("Brors et al.") in view of U.S. Patent No. 6,403,925 ("Johnsgard et al."); claims 3/1 and 3/2 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Brors et al. in view of Johnsgard et al. or Voweles et al., respectively; claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Brors et al. in view of Johnsgard et al. and U.S. Patent No. 5,624,499 ("Mizuno et al."); claim 6/1 and 7/1 were rejected under 35 U.S.C. 103(a) as being unpatentable over Brors et al. in view of Johnsgard et al., U.S. Patent No. 4,952,273 ("Popov"), and U.S. Patent No. 5,830,310 ("Doi"); and claims 6/2 and 7/2 were rejected under 35 U.S.C. 103(a) as being unpatentable over Voweles et al. in view of view of Popov and Doi.

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Applicants respectfully request the Examiner to withdraw the rejection of claims 1, 3/1, 4, 6/1, and 7/1 because none of the references discloses or suggests all the claimed elements of claim 1.

Claim 1 is directed to a processing apparatus for removing an oxide film from a surface of an object to be processed including, *inter alia*, a heater to heat an object, a transparent window located between the heater and the object, a shielding plate capable of being inserted or extracted from a gap between the object and the transparent window.

In this configuration, on condition that the shielding plate is closed, it is possible to insulate the radiation heat radiated from the transparent window to the object, thereby allowing the oxide film formed on the surface of the object to react with the active gas species to form a product film. Also, on condition that the shielding plate is open, it is possible to apply radiation heat radiated from the heater to the object through the transparent window to heat the product film to evaporate it.

Brors et al. discloses a vacuum chamber 22 having upper walls 100a. A quartz window 104 is positioned within each of the walls 100a as shown in Fig. 12. A thermal shield plate 122 is secured to the sidewalls 100a by a plurality of retaining clamps 124. The shield plate 122 acts to diffuse heat emitted from the heating structure 400 to allow more uniform distribution of heat energy. See col. 10. lines 64-66. Therefore, Brors et al. fails to disclose that the shield plate 122 is able to be inserted into or extracted from the gap between the object and the transparent window.

Johnsgard et al. discloses a thermal processing chamber 500 including a wafer 506, a resistive heater 520, and a viewing window 505. Johnsgard et al. also discloses that when "a window is not used, a nontransmissive plate may be used to cover the

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viewing port for improved insulation." See col. 9, lines 65-67. Johnsgard et al. fails to disclose that the viewing window 505 is between the resistive heater 520 and the wafer 506. Furthermore, Johnsgard et al. fails to disclose how the processing chamber 500 could open the nontransmissive plate.

The transparent window recited in claim 1 transfers heat energy form the heater to the object therethrough when the object should be heated. Therefore, the transparent window is heated by the heater and radiates heat energy to the object even when the object should not be heated. In this condition, the shielding plate is able to be inserted into or extracted from the gap between the object and the transparent window in order to prevent the heat energy emitted from the transparent window from reaching the object when the object should not be heated.

Johnsgard fails to disclose any processing apparatus having a transparent window as defined in claim 1, and, therefore, there is no need for a shielding plate, as required by the claim.

Neither Brors et al. nor Johnsgard et al., taken singly or in combination, discloses all of the features cited in the claim. Therefore, claim 1 is allowable and Applicants' request that the rejection of claim 1 be withdrawn. Moreover, one of ordinary skill in the art would not be motivated to combine Brors et al. and Johnsgard et al. because Brors et al. discloses shields 122 to provide for diffusion of heat transmitted through the quartz window 104, while Johnsgard et al. discloses that a nontransmissive plate may be used to improve insulation. Such a modification of shield 122 would defeat the purpose of the shield disclosed by Brors et al.

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None of the other references cited, taken singly or in combination, discloses all features recited in claim 1, therefore claim 1 is allowable. Claims 3/1, 4, 6/1, and 7/1 are allowable for at least the same reasons claim 1 is allowable.

Applicants also respectfully request the Examiner to withdraw the rejection of claims 2, 3/2, 5, 6/2, and 7/2 because none of the references discloses or suggests all features of claim 2.

Claim 2 is directed to a processing apparatus for removing an oxide film from a surface of an object to be processed including, *inter alia*, a first processing chamber, a second processing chamber, and a transporter. The first processing chamber has an active gas species generating unit for producing active gas species; and also allows the oxide film formed on the surface of the object to react with active gas species under a condition of low temperature, thereby forming a product film. The second processing chamber has a heater for heating the object to be processed; and allows the heater to heat the product film formed on the surface of the object to a predetermined temperature for vaporization, thereby removing the product film formed in the first processing chamber. The transporter transports the object, on which the product film is formed in the first processing chamber, between the first processing chamber and the second processing chamber.

Vowles et al. disclose a system in which a mulitchamber multiprocessing facility 10 is connected to a second multichamber mulitproccesing facility 12 through an intermediate cassette system 14. The intermediate cassette system 14 typically comprises a multiwafer containing cassette and elevator for positioning each wafer slot in the cassette at a point where it can be accessed by a transfer arm contained within respective transfer mechanism 16 and 18 of the mulitprocessing facilities 10 and 12.

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Vowles et al. disclose several different chamber 22, 24, 26, and 28. Each of chambers 26 and 28 includes a module 52 that is, for example, intended for plasma etching of the surface of the wafer 60. But other modules can be provided that employ other processing technologies such as, for example, chemical vapor deposition, sputtering, rapid thermal processing, rapid thermal annealing, plasma cleaning to name a few, and utilizing technology and apparatus already known in the art. See col. 3, lines 42-50.

These disclosures do not include all elements of the present invention defined by claim 2. For example, Vowles fails to disclose any apparatus in which a first processing chamber allows a oxide film formed on the surface of an object to react with an active gas species under a condition of low temperature, thereby forming a product film. Also, Vowles fails to disclose any apparatus having a second processing chamber with a heater for heating an object and allowing the heater to heat the product film formed on the surface of the object to a predetermined temperature for vaporization, thereby removing a product film formed in a first processing chamber.

The Examiner's mere allegation at page 3 of the Office Action that although a heater is not explicitly disclosed, it would inherently be a part of a rapid thermal annealing chamber is not sufficient support for a § 102 rejection of claim 2. M.P.E.P. § 2112 sets forth the specific requirements that the Examiner must show in support of an inherency argument. Generally, inherency requires an identical structure that does not explicitly disclose a particular function, result, or characteristic, but necessarily provides the function, result, or characteristic. In this case, the Examiner has failed to show any prior art apparatus that discloses all of the claimed elements including a heater. There is nothing in the cited reference to suggest that second processing chamber 24 requires a heater. Therefore, Vowles cannot anticipate claim 2

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because it does not teach any heater associated with the second processing chamber 24.

For at least these reasons, Vowles does not disclose all of the elements of the claimed invention and the § 102 rejection should be withdrawn. Claims 3/2, 5, 6/2, and 7/2 are allowable for at least the same reason as claim 2 is allowable.

Newly added claims 10-13 depend from claims 1 or 2 and are allowable for at least the same reasons that claims 1 or 2 are allowable.

In view of the foregoing amendments and remarks, Applicants respectfully requests the reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: January 30, 2003

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APPENDIX TO AMENDMENT

Amendments to the claims:

1. (Amended) A processing apparatus for removing an oxide film from a surface of an object to be processed, the processing apparatus comprising:

a processing container accommodating the object to be processed therein;

an active gas species generating unit for producing active gas species;

a heater arranged outside the processing container to heat the object to be processed;

a transparent window formed in the processing container between the heater and the object to be processed, the transparent window sheltering the interior of the processing container from the outside in an airtight manner and also allowing heating energy from the heater to pass through; and

a shielding plate provided in such a way that the shielding plate can be inserted into or extracted from a gap between the object and the transparent window;

wherein, on condition that the shielding plate is closed to insulate irradiation heat radiated from the transparent window to the object to be processed, the processing apparatus allows the oxide film formed on the surface of the object to react with the active gas species, thereby forming a product film; and subsequently,

the processing apparatus opens the shielding plate so as to apply irradiation heat irradiated from the heater to the product film through the transparent window and further heats the product film to a predetermined temperature for vaporization, thereby removing the product film.

2. (Amended) A processing apparatus for removing an oxide film from a surface of an object to be processed, the processing apparatus comprising:

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a first processing chamber having an active gas species generating unit for producing active gas species and also allowing the oxide film formed on the surface of the object to react with the active gas species under a condition of low temperature, thereby forming a product film;

a second processing chamber having a heater for heating the object to be processed and allowing the heater to heat the product film formed on the surface of the object to a predetermined temperature for vaporization, thereby removing the product film formed in the first processing chamber; and

transporter for transporting the object on which the product film is formed in the first processing chamber between the first processing chamber and the second processing chamber.

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